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1. Accession	Agency Identification No.	5. Work Unit/Project No.	6. Status
0220413	2. CSREES 3. LA.B	**LAB94010**	**Annual Report**

7. Title

Development of Rapid Methods for Detection and Enumeration of Vibrio vulnificus, Vibrio parahaemolyticus and Enteric Viruses in Seafood and

12. Investigator Name(s) (Last Name and Initials)

Janes, M. E.

20. Termination Date 09/30/2014

40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011

Outputs:

Two journal articles and one presentation at a national meeting were used to dessiminate project information.

Outcomes/Impacts:

Vibrio vulnificus (V. vulnificus) is considered to be the most invasive Vibrio in the U.S., causing high fatalities especially in immunocompromised individuals. The rapid detection of V. vulnficus is necessary for monitoring this pathogen in the environment and in seafood as a pro-active measure to reduce V. vulnificus-related infections. The purpose of this study was to develop a rapid, user friendly and compact screening dipstick device utilizing V. vulnificus anti H monoclonal antibodies, which can detect the presence of V. vulnificus from oyster homogenate within 5 min. The dipstick test strips were prepared by conjugating the species-specific anti V. vulnificus H monoclonal antibody 3-D-10 colloidal gold particles. Resultant antibody conjugate was dispensed onto a membrane at a rate of 1 micro-liter/cm. The control line was prepared by using Goat anti Mouse IgG and sprayed on the membrane at the rate of 1.5 micro-liter/cm. Specificity of the dipstick device was tested against pure culture of 8 vibrio strains while sensitivity was tested by utilizing serially diluted overnight grown V. vulnificus culture (106 to 101 CFU/ml). Sensitivity of the device was tested with spiked oyster meat homogenate (10g oyster meat + 20ml APW), spiked with V. vulnificus ATCC 27562, to reach concentrations from 101 to 106 CFU/ml. One ml from each sample was collect every hr for 6 hr and immediately tested with the dipstick. Our dipstick device successfully identified V. vulnificus and did not produce visible signal, for other Vibrio strains tested within 5 min. The lowest concentration of V. vulnificus that produced positive test strip results was 104 CFU/ml, and when combined with 5 hr enrichment, the sensitivity of the dipstick increased to 101 CFU/ml. Our dipstick assay could be an answer to seafood industries rapid pathogen detection needs.

Publications:

Qureshi, M. E. Janes and D. Hayes. 2011. Biocompatible/Bioabsorbable silver nanocomposite coatings. Journal of Applied Polymer Science 120:3042-3053.

M. R. Cole, M. Li, B. El-Zahab, M. E. Janes, D. Hayes, and I. M. Warner. 2011. Design, Synthesis, and Biological Evaluation of β-Lactam Antibiotic-Based Imidazolium- and Pyridinium-Type Ionic Liquids. Chemical Biology & Drug Design 78:33-41.

Jadeja, R., M.E. Janes, and J. Simonson. 2011. Dipstick assay for Vibrio vulnifus. IAFP, Milwaukee, WI. Abstract P3-07.

Participants:

M.E. Janes, (PI), and R. Jadeja, LSU AgCenter.

Target Audiences:

The oyster industry needs a rapid method for detection of Vibrio vulnificus in oysters. Our research project will help fill this gap.

Project Modifications:

Nothing significant to report during this reporting period.

Approved (Signature)	Title	Date
		3-23-12